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schüssiger Kräfte und das der activen Erholung erschöpfter Kräfte." The æsthetic social point of view is enlarged on throughout much in the same way as in his previous work.

In general the remarks we have made on Professor Groos's previous work (*Psychological Review*, Vol. 6, p. 86 ff.) apply also to this. The last book is larger, fuller and more cautious, but it lacks in clearness and directness and penetration. Though sometimes suggestive, it is rarely illuminating. Very comprehensive and learned, it is useful as a summary and discussion, but it has not the vitality of real research. The book is swamped in quotation, and we have more a history and discussion of opinion than a first-hand investigation. Though by bringing in everything of the least relevancy Professor Groos attains a certain completeness, it is greatly to be doubted whether in breaking ground in a new subject this is the most useful method. The foundations for a real science of play can only be laid by the direct detailed study of the life-history of the individual, the results being made to an extent verifiable by the photograph and phonograph.

HIRAM M. STANLEY.

BOOKS RECEIVED.

The Elements of Practical Astronomy. W. W. CAMPBELL. New York and London, The Macmillan Company. 1899. Pp. xii + 264. \$2.00.

Nature Study for Grammar Grades. WILBUR S. JACKMAN. New York and London, The Macmillan Company. 1899. Pp. 407. \$1.00.

The Fairyland of Science. ARABELLA B. BUCKLEY. New York, D. Appleton & Co. 1899. Pp. x + 252. \$1.50.

Electricity in Town and Country Houses. PERCY E. SCRUTTON. Westminster, Archibald Constable & Co. 1899. 2d Edition. Pp. xii + 148.

Report of the Commissioner of the United States Commission of Fish and Fisheries. Pp. clxxv + 350.

Corn Plants. F. L. SARGENT. Boston and New York, Houghton, Mifflin & Co. 1899. Pp. 106. 75 cts.

Anglo-American Pottery. E. A. BARBER. Indianapolis, Ind., Press of the Clay Worker. 1899. Pp. xix + 161.

Photographic Optics. R. S. COLE. New York, D. Van Nostrand Company. 1899. Pp. 330.

SCIENTIFIC JOURNALS AND ARTICLES.

The Botanical Gazette for April contains the following leading articles: 'A Conspectus of the Genus *Lilium*,' by F. A. Waugh, which brings together and organizes the widely scattered material; 'Some Appliances for Elementary Study of Plant Physiology,' by W. F. Ganong, in which are described, with figures, a temperature stage, a clinostat, a self-recording auxanometer, an osmometer, a respiration apparatus, a germination box, a transpiration device, the graduation of roots, tubes, etc., and a root-pressure gauge; 'Oogenesis in *Pinus Laricio*,' by Charles J. Chamberlain, a paper with plates, in which the following results are announced: The ventral canal cell occasionally develops as an egg; the chromatin of the egg nucleus takes the form of nucleoli which finally collect from all parts of the nucleus to a definite area near the center and there develop into a typical spirem; the chromatin of the two sexual nuclei is in the spirem stage at fusion; the fate of the spindle indicates that the kinoplasmic fibers arise through a transformation of the cytoplasmic reticulum; a continuation of 'The Ecological Relations of the Vegetation of the Sand Dunes of Lake Michigan,' by Henry C. Cowles, the present part, profusely illustrated, discussing the encroachment on preexisting plant societies and the capture of the dune-complex by vegetation. Under 'Briefer Articles' Julia W. Snow describes (with plate) the life history of a new *Ulvella* (*U. Americana*), and Bradley M. Davis discusses recent work on the life history of the Rhodophyceæ. The number closes with the usual reviews, notes for students and news.

American Chemical Journal, April, 1899. 'On the Hydrolysis of Acid Amides.' By I. Remsen and E. E. Reid. The rate of hydrolysis of a large number of acid amides was compared and certain groups or positions of groups were found to exercise a marked influence on the reaction. In general the results agree with those obtained in the study of the rate of formation of ethereal salts. Ortho groups were found to exert a very marked 'protective' influence in many cases. 'Aliphatic Sulphonic Acids.' By E. P. Kohler. The author describes the preparation and reaction of (1) brome-

thylene sulphonic acid and its derivatives. 'A Serviceable Generator for Hydrogen Sulphide:.' By W. P. Bradley. This generator is so arranged that all the acid is used, and it only needs filling several times a year. The iron salt formed does not mix with the acid, but is drawn off and thrown away.

J. ELLIOTT GILPIN.

SOCIETIES AND ACADEMIES.

THE NATIONAL ACADEMY OF SCIENCES.

THE annual stated meeting of the National Academy of Sciences was held at Columbian University beginning Tuesday, April 18th, and ending Thursday, April 20th. The members missed the rooms to which they were so long accustomed in the National Museum, but the growth of this institution has been so marked that there is no longer any room available for such purposes. A committee has been appointed to secure, if possible, permanent quarters, and it is hoped that, in view of the relations of the Academy to the United States government, rooms may be set aside in some public building for the use of the Academy.

The papers presented at the public sessions were as follows :

1. *Ophiura Brevispina*, W. K. Brooks and Caswell Grave.
2. The Shadow of a Plant, A. Hall.
3. On the Tanner Deep Sea Tow Net, A. Agassiz.
4. On the Acalephs of the East Coast of the United States, A. Agassiz and A. G. Mayer.
5. On the Limestones of Fiji, E. C. Andrews ; communicated by A. Agassiz.
6. On the Bololo of Fiji and Samoa, W. McM. Woodworth ; communicated by A. Agassiz.
7. On the Diamond and Gold Mines of South Africa, A. Agassiz.
8. Progress in Surveying and Protection of the U. S. Forest Reserves, Chas. D. Walcott.
9. The Resulting Differences between the Astronomic and Geodetic Latitudes and Longitudes in the Triangulation along the Thirty-ninth Parallel, H. S. Pritchett ; introduced by Chas. D. Walcott.
10. The Work of the Division of Forestry, Department of Agriculture, Gifford Pinchot ; introduced by Chas. D. Walcott.
11. On the Development by Selection of Supernumerary Mamme in Sheep, A. Graham Bell.
12. On Kites with Radial Wings, A. Graham Bell.

13. Remarks on the Work of the Nautical Almanac During the Years 1877-98 in the Field of Theoretical Astronomy, S. Newcomb.

14. Exhibition of Specimens of *Nautilus pompilius*, W. K. Brooks and L. E. Griffin.

The new members elected are : Professor C. E. Beecher, Yale University ; Professor George C. Comstock, University of Wisconsin ; Professor Theodore W. Richards, Harvard University ; Professor Edgar F. Smith, University of Pennsylvania, and Professor E. B. Wilson, Columbia University.

The Academy adjourned to meet in New York next November.

THE PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 499th meeting of the Society was held at 8 p. m., April 1st, in the assembly room of the Cosmos Club. The first paper was by Mr. G. W. Littlehales on 'The Prospective Place of the Solar Azimuth Tables in the Problem of Accelerating Ocean Transit.' A brief abstract of this paper will appear later in SCIENCE. The second paper was by Mr. E. G. Fisher on 'Data Relating to Nickel Iron Alloy.' The third paper was by Mr. H. A. Hazen on 'Electric and Magnetic Weather.' Mr. Hazen said in part :

One of the earliest coincidences between the weather and magnetism was published in a set of curves in the Annual Report of the C. S. O. for 1882, showing the exact correspondence between the curves of diurnal range of magnetic declination and pressure of the air. In April, 1898, a period of 25.912 days was found from temperatures for 20 years at Omaha, Neb., and this period applied to the annual observations in the United States from 1870 to 1898 (about 400 occurrences) showed a marked maximum point on one day throughout. The largest number of auroras observed in any one day in the United States fell upon this same day (not included, however, in the count). In February, 1899, Dr. Ekholm sent a paper in which he had established a period of 25.92876 days from observations of the auroras in Sweden for 175 years. This period, applied to the above observations, gave almost a straight line. The great danger of using the twenty-four-hour change in any element was pointed out. It was shown